

as well as costiveness, were upon two different occasions, the seventeenth and twenty-first days after admission, experienced, but subsided shortly after free evacuations had been obtained by injections, and the administration of anodynes. About the first part of the sixth week, the diarrhœa alluded to previously, occurred, and it continued, more or less, for upwards of two weeks, or until the latter end of October. It had a very decided effect over his general health. The powers of the stomach became greatly enfeebled, nutrition much impaired, and very great emaciation induced; in fine, our patient was brought almost to the very verge of the grave. From the character of the discharges, it was very apparent, that the irritation affected not only the bowels, but also the liver. The means used for counteracting the diarrhœa, consisted principally of castor oil, alone or with laudanum, given internally, of antacid astringents with laudanum, and of demulcent anodyne injections. Since the first of November, his bowels have continued, generally, in pretty good order, and his digestion has gone on as well as could have been expected. His limbs are still small, though not near so much emaciated as they were, in consequence of the diarrhœa. His general strength is increasing, and for a month past he has been able to sit up, and to be moved about the ward, in a chair with wheels attached to it: the weather not permitting him to be taken into the open air, as it has been very disagreeable for several weeks past.

Hospital, 31st December, 1827.

ART. XI. *Observations on the inefficiency of the cathartic powers of Rhubarbarine, with some Remarks on the different varieties of Rhubarb.* By GEORGE W. CARPENTER, of Philadelphia.

THERE is perhaps no maxim more generally admitted, than that "there is no rule without an exception." Among the discoveries and researches in the various departments of arts, science, and manufactures, there is occasionally found one which, (either from being overrated by too hasty an observation, or defective from difficulties in the manufacture or construction,) fails to support the characters assigned to it by its discoverer, or by those who may have described it. When an instance of this description is discovered, any one having full evidence of the fact, should consider it his duty to point out the error. Vegetable chemistry has added to our *materia medica* a catalogue

of highly useful and important remedies, among which stand conspicuous, quinine, cinchonine, morphine, strychnine, cornine,* piperine, &c. all of which have continued after a full and extensive trial to support the characters originally assigned them, with the exception of one, which is the subject of the present communication.

Disagreeable as it is for me to criticise the writings and discoveries of men, eminent in the profession, yet for the promotion of science, and the propagation of truth, I shall not hesitate to do so, and feel confident that in this I shall meet with their approbation, inasmuch as the error was altogether inadvertent, and their object exclusively, to give the article its true and real characters.

A chemical principle discovered by M. PFAFF, and also prepared by M. NANI, a distinguished chemist of Milan, has been obtained from the rheum palmatum. M. Nani denominated this principle sulphate of rhubarb, which name it still retains. M. Nani reports the article to be cathartic in doses of a few grains, and to possess many advantages over the rhubarb, from the circumstance of its possessing an uniform activity, while the different kinds of rhubarb have qualities so various, that in many cases the ordinary doses are very uncertain, &c. &c.†

From the high commendation of this medicine, I was induced, at the instance of several of the faculty of this city, to prepare some of the article, as there had not yet been any received in this country. I accordingly adopted a process founded on that of Nani, but with some modifications, and published my formula with observations in the Philadelphia Journal of the Medical and Physical Sciences, and in Silliman's Journal—from which it was translated and inserted into the Bulletin des Sciences Medicales, for April, 1826, with some editorial remarks. Although I feel bound to acknowledge that I was the first to introduce this article in Philadelphia, and have sent a considerable portion to physicians in different parts of the United States, I must say, in justice to myself, that my province was exclusively confined to the preparation of the article—its *modus operandi* was submitted to the judgment and experience of those who were engaged

* It is much to be regretted that the *cornus florida* should yield the cornine in so minute a proportion as to prevent the discoverer from supplying the demand. This medicine has uniformly supported the character and description given by my friend, Dr. S. G. Morton, and the author can produce testimonials of the highest authority from different parts of the United States corroborating this statement, and furnishing additional proofs of the efficacy of the cornine in the treatment of intermittents.

† See Bib. Univer. July, 1823, also Silliman's Journal, vol. 7, page 385.

in the practice of medicine. My paper went to press early after I had prepared the article, and before I could collect sufficient facts to justify any conclusions as to its effects in the hands of those who had first employed it in this city; my observations, therefore, in relation to its virtues were upon the authority of M. Nani, and although modified a little, and commending less its cathartic energy, were, nevertheless, greater than it merited, and further experiments have warranted.

The physicians who first employed this medicine were so disappointed with its activity, that I was apprehensive of having failed in some part of the process for its manufacture. I therefore prepared it with great care several successive times, both according to the formula of Nani and my modified process, but with the same result; in order to prove positively there was no defect in the manufacture, I sent to Paris and procured it of the manufacture of PELLETIER, which was found to be equally feeble, if not more so, than that which I prepared—proving beyond question that the powers of the rhubarbarine had been much overrated. That manufactured by Pelletier required a larger dose than the extract of rhubarb prepared according to my formula in the Philadelphia Journal of the Medical and Physical Sciences. I have taken several times twenty grains and upwards without its producing a cathartic effect.

The rhubarbarine resembles more an extract than any of the vegetable principles. It is solid, dark brown, opaque, possessing the odour of rhubarb, and a taste slightly nauseous and bitter, it is deliquescent, and very soluble in water, alcohol, and æther. I cannot consider this to be the active principle of rhubarb, as a considerable portion of cathartic matter is retained by solution in the water, from which the rhubarbarine is precipitated. The term sulphate of rhubarb is an extremely improper application, as there is no sulphuric acid in its composition. The sulphuric acid first employed in the acidulated decoction is entirely decomposed by lime with which the rhubarbarine is precipitated perfectly uncombined with acid, it is then taken up by alcohol, separating it from the sulphate of lime. The alcohol containing the rhubarbarine is then evaporated until the latter is obtained in the form above described. It is evident therefore, that from this process there can be no sulphuric acid in its composition, and that the term sulphate of rhubarb is not applicable. I several times used the term in my former paper, as it was originally bestowed up it, and its use was sanctioned by custom and authority.

The process for manufacturing the rhubarbarine is expensive, and the product small, which renders it as costly as the sulphate of

quinine, it is therefore particularly important that its true properties should be made known.

The rhubarb of commerce differs materially in activity, and great deception is practised in selecting and artificially preparing the roots, so that the same species will frequently be sold for East India, Russia, or Turkey, and command corresponding prices.

Four varieties of rhubarb are indigenous and cultivated in France, viz. the rheum palmatum, compactum, undulatum, and rhaponticum. The superiority, however, of the palmatum, has caused the cultivation of the others to be neglected or abandoned. The difference between the activity of the French and English rhubarb, and that of China and Turkey, is caused by the age of the root; the former after three years growth decaying in the ground, while the latter are not taken up until the seventh or eighth year of their growth. The China and Turkey rhubarb grows without culture in almost any situation; the French and English requires a moist soil and a particular degree of exposure, and also considerable attention in cultivation. The former possesses a colour more fixed, a stronger odour, and a taste quite aromatic and slightly bitter—the latter, a taste more mucilaginous and herbaceous, and evidently a less degree of strength. From chemical analysis, first made by Mr. HENRY, and afterwards by the celebrated M. CAVENTON,* we find that one hundred parts of China rhubarb contain seventy-four parts soluble in alcohol and water; a like quantity of the cultivated rheum palmatum furnished but sixty-four, the compactum but fifty, the undulatum but thirty-two, and the rhaponticum but thirty. Thus the rheum palmatum is proved to be the most active of the indigenous species, but is inferior to the China. It is proved that the strength of the indigenous rhubarb increases with its age, but as it cannot, from circumstances already quoted, attain the age of the exotic, it never can equal it in strength. Numerous experiments made by Dr. GEORGE FROY, M. ITARD, and M. RIBES, in several public institutions of France, prove that the indigenous rhubarb is purgative, and may be substituted for the exotic, in pharmaceutical preparations, by employing one-fourth more than the latter.

* Bulletin des Sciences Medicales, Avril, 1826.